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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/625,360 | 07/23/2003 | Rahul Sarpeshkar | MIT8924 | 8225 |

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07/27/2007

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| EXAMINER |
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FAULK, DEVONA E

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| ART UNIT | PAPER NUMBER |
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2615

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07/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/625,360

Applicant(s)

SARPESHKAR ET AL.

Examiner

Devona E. Faulk

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-19, 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-9, 20 and 23 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/20/2003
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The applicant has amended claim 1 with subject matter indicated allowable in the previous office action. Claims 10-22 were indicated as allowable in the previous office action.
2. The indicated allowability of claims 3,10-22 is withdrawn in view of the newly discovered reference(s) to Williamson. Rejections based on the newly cited reference(s) follow.
3. Claim 3 is cancelled.

Specification

4. The disclosure is objected to because of the following informalities:
5. Claim 20 recites " a unity differentiator function". The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 20 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 20 recites "a unity differentiator function". It is not clear what to the examiner what is meant by unity differentiator function or what how this function is applied to the data. The specification therefore is not enabling with regard to this limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1,2,5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Williamson et al. (US 5,027,410).

Regarding claim 1, Williamson discloses a spectrum enhancement system (Figure 8) comprising:

a plurality of distributed filters, at least one of said filters for receiving a multi-frequency input signal (filters 131-134, Figure 8; column 13, lines 34-40);

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a plurality of energy detection units, each of which is coupled to an output of at least one filter and each of which provides an energy detection output signal (161-165, Figure 8; column 13, lines 43-48; an envelope detector detects the amplitude);

a weighted averaging unit that is coupled to each of said energy detection units and that provides a weighted averaging signal of said filters responsive to the energy detection output signals from each of said energy detection units (167, Figure 8)

wherein said plurality of energy detection units are coupled to the outputs of the filters via a plurality of differentiator units, each of which is coupled to an output of each of said filters and to one of said energy detection units (141-145, Figure 8).

All elements of claim 2 are comprehended by the rejection of claim 1 (it is implicit that the weighted averaging signal is a non-linear signal since its output is the input to spectral filter, 171, Figure 8 which reads on non-linear unit).

All elements of claims 5-7 are comprehended by the rejection of claim 1.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Williamson et al. (US 5,027,410) in view of Lindemann et al. (US 5,757,932).

Williamson discloses that the signal input to the time varying filter is acoustic.

Williamson fails to disclose that the signal is an electromagnetic signal. Lindemann discloses a digital hearing aid including an electromagnetic transceiver that transmits the signal representing the sound at one ear (column 2, lines 27-34; Figure 3; column 6, lines 1-19). Williamson does not place limitations on what type of signal the input signal can be, therefore, it would have been obvious to modify Williamson so that an electromagnetic transceiver provides the input signal.

12. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al. (US 5,027,410) in view of Chen (US 6,990,205).

Regarding claim 9, Williamson discloses of calculating filter coefficients at 167, Figure 8, a weighted averaging signal and that the out of 167 is sent to a spectral filter which reads on non-linear unit. Williamson fails to explicitly disclose that the signal is obtained using linear spatial filtering.

Chen discloses obtaining a signal using linear spatial filtering (column 16, lines 50-52; column 17, lines 1-5). It would have been obvious to modify Williamson by having the weighted averaging signal obtained using linear spatial filtering in order to provide an improved enhanced signal.

Claim 23 is rejected with Williamson as applied above to claim 1 and Chen as applied to claim 9.

Claim Objections

13. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

14. Claims 10-19,21,22 are allowed.

Regarding claims 10,18 and 21, prior art Williamson (US 5,027,410) discloses an adaptive programmable signal processing and filtering for hearing aids including at a plurality of filters that receive a multi-frequency input signal, energy detection units and a weighted averaging unit. Prior art Lyon (US 4,536,844) discloses a method and apparatus for simulating aural response information. Prior art Slaney et al. (US 5,473,759) discloses a sound analysis and resynthesis using correlations. Prior art Watts (US 7,076,315) discloses an efficient computation of log-frequency-scale digital filter cascade. Prior art Faltys et al. (US 6,980,864) discloses a high contact count, sub-miniature, full implantable cochlear implant.

Regarding claims 10 and 21, the prior art or combination thereof fails to disclose or make obvious the non-linear unit providing a resonant gain signal Q to said filter (low pass filter) responsive to said weighted-averaging signal.

Regarding claim 18, the prior art or combination thereof fails to disclose or make obvious a weight averaging unit that provides a weighted averaging signal to each of said low pass filters responsive to the energy detection output signals from each of said energy detection units.

Therefore the prior art or combination thereof fails to disclose or make obvious a spectrum enhancement system and a method of providing spectral enhancement as claimed.

Claims 11-17, 19 and 22 are allowed due to dependency on claims 10, 18 and 21.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DEF



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